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TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	10/625,838	
	Filing Date	July 22, 2003	
	First Named Inventor	Volker Krueger et al.	
	Art Unit	3672	
	Examiner Name	Frank Tsay	
Total Number of Pages in This Submission	26	Attorney Docket Number	564-09225-US-C3

ENCLOSURES (Check all that apply)		
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<input type="checkbox"/> Amendment/Reply	<input checked="" type="checkbox"/> Petition to Withdraw Holding of Abandonment	<input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT			
Firm Name	Madan, Mossman & Sriram, P.C.		
Signature			
Printed name	Chandran D. Kumar		
Date	September 9, 2005	Reg. No.	48,679

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: **Volker Krueger et al.**

SERIAL NO.: **10/625,838**

FILED: **July 22, 2003**

TITLE: **Drilling Assembly With Steering Device
For Coiled-Tubing Operations**

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Group Art Unit: **3672**

Examiner: **Frank Tsay**

Atty. Docket: **564-09225-US-C3**

Confirmation No. **8973**

**PETITION TO WITHDRAW HOLDING OF ABANDONMENT
UNDER 37 CFR 1.181(a)**

Mail Stop: Issue Fee
Commissioner of Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sirs:

Applicants received a Notice of Abandonment mailed August 18, 2005 stating abandonment of the captioned application in view of Applicant's failure to timely file a proper reply to the Office letter mailed on June 1, 2005. This Petition is being filed within two months of the mailing date of the Notice of Abandonment. Applicants respectfully submit that the Notice of Abandonment is inappropriate as a response to the June 1, 2005 Office letter was timely filed and mailed to the Mail Stop Issue Fee by Express Mail on July 1, 2005.

Attached are copies of the Response Notice of Drawing Inconsistency With Specification and Rule 312 Amendment as timely submitted on July 1, 2005, along with a copy of the annotated and replacement drawings as required. Also attached is a copy of Applicants' return postcard showing a date stamp by the USPTO (OIPE) as July 1, 2005 and a copy of the Express Mail Label as stamped by the U.S. Postal Service on July 1, 2005. The undersigned notes the typographical error in the date of the Express Mail certificate attached to the Response showing a June 1, 2005 mail date and draws the attention of the Office to the stamped Express Mail Label and return postcard both of which confirm the July 1, 2005 correct mail date.

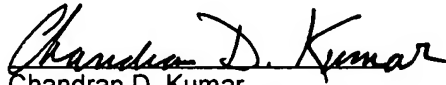
Applicants respectfully request that, with the submission of the attached documents as sufficient evidence, the Petition be granted dismissing the Notice of Abandonment as untimely under 35 CFR 1.181(f).

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Applicants believe that no fees are due with this Petition but should the Office deem otherwise, the Commissioner is authorized to charge any fees or credit any overpayment to Deposit Account No. **02-0429 (564-09225-USC3)**.

Respectfully submitted,

Date: September 9, 2005



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Margaret A. Pruitt



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Volker Krueger et al.

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Art Unit: 3672

Serial No: 10/625,838

Filed: July 22, 2003

Frank Tsay

Title: "Drilling Assembly with a Steering
Device for Coiled-Tubing
Operations"

Docket No: 564-9225-US-C3

MS Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**RESPONSE NOTICE OF DRAWING INCONSISTENCY WITH
SPECIFICATION AND RULE 312 AMENDMENT**

This is in response to the Response Notice of Drawing Inconsistency, dated June 1, 2005 for the above-identified patent application.

Amendments to the Drawings begin on page 2.

Amendments to the Specification begin on page 3.

Remarks begin on page 10.

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AMENDMENTS TO THE DRAWINGS

Please amend **Figure 1b** as shown in red ink in the accompanying Drawing. Please add new **Figure 1d**.

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AMENDMENTS TO THE SPECIFICATION

The amendments to the specification are provided below:

Replace the paragraph beginning on page 1, line 1 with the following:

This application ~~takes priority from~~ Claims the benefit of earlier filed provisional United States Application Serial No. 60/036,572, filed on January 29, 1997. This application is also a continuation of co-pending application Serial No. 09/015, 848, filed on January 29, 1998, now abandoned and United States Patent Application Serial No. 10/100,671 filed on March 18, 2002.

Add the following new paragraph on page 6, line 10:

Figure 1d is a schematic view cross-sectional side view of an alternate embodiment of a power unit for a pump.

Replace the paragraph beginning on page 6, line 20 with the following:

Figure 4 is a schematic view of a configuration of the steering members disposed around a non-rotating housing for use in the steering devices of **Figures [[1-4]] 1-3**.

Replace the paragraph beginning on page 7, line 1 with the following:

Figure 5 is a schematic view of an alternative configuration of the steering members disposed around a non-rotating housing for use in the steering devices of **Figures [[1-4]] 1-3**.

Replace the paragraph beginning on page 8, line 16 with the following:

The bearing assembly **20** contains within its housing **22** suitable radial bearings **56a** that provide lateral or radial support to the drive shaft **28** and the drill bit **42 50**, and suitable thrust bearings **56b** to provide axial (longitudinal or along wellbore) support to the drill bit **42 50**. The drive shaft **28** is coupled to the shaft **18** by a suitable coupling **44**. The shaft **18** is a flexible shaft to account for the eccentric rotation of the rotor **14**. Any suitable coupling arrangement may be utilized to transfer rotational power from the rotor **14** to the drive shaft **28**. During the drilling of the wellbores, the drilling fluid **52** leaving the power section **[[14]] 12** enters the through passage **24** of the drive shaft **28** at ports or openings **46** and discharges at the drill bit bottom **53**. Various types of bearing assemblies are known in the art and are

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thus not described in greater detail here.

Replace the paragraph beginning on page 9, line 21 with the following:

The operation of each steering rib 32 is independently controlled by a separate piston pump 40. For short radius drilling assemblies, each such pump 40 is preferably an axial piston pump 40 disposed in the bearing assembly housing 22. In one embodiment, the piston pumps 40 are hydraulically operated by the drill shaft 28 utilizing the drilling fluid 52 flowing through the bearing assembly 20. A control valve 33 is disposed between each piston pump 40 and its associated steering rib 32 to control the flow of the hydraulic fluid from such piston pump 40 to its associated steering rib 32. Each control valve 33 is controlled by an associated valve actuator 37, which may be a solenoid, magnetostrictive device, electric motor, piezoelectric device or any other suitable device. To supply the hydraulic power or pressure to a particular steering rib 32, the valve actuator 37 is activated to provide hydraulic power to the rib 32. If the valve actuator 37 is deactivated, the check valve is blocked, and the piston pump 40 cannot create pressure in the rib 32. During drilling, all piston pumps 40 are operated continuously by the drive shaft 28. In one method, the duty cycle of the valve actuator 37 is controlled by processor or control circuit 80 disposed at a suitable place in the drilling assembly 100. Figure 1A shows the control circuit 80 placed in the rotor 14 to conserve space. The control circuit may be placed at any other location, including at a location above the power section 40 12. Instead of using the hydraulic power to operate the pumps 40, each pump 40 may be operated by electric motors (not shown) suitably disposed in the bearing assembly 20. A separate electric motor may be operably connected to each pump. Each of the electric motors can be configured to control a linear motion of pump to move the rib between a normal or collapsed position 32a and an extended position 32b.

Replace the paragraph beginning on page 11, line 21 with the following:

The use of axial piston pumps 40 enables disposing such pumps 40 in the bearing assembly and relatively close to the ribs 30. This configuration can reduce the overall length of the drilling assembly. Placing the ribs 32 in the housing 22 of the bearing assembly 20 aids in drilling relatively shorter radius boreholes. The above-described arrangement of the

steering device 30 and the ability to independently control the pressure on each rib 32 enables steering the drill bit 12 in any direction and further enables drilling the borehole with a controlled build-out rate (deviation angle). Preferably a separate sensor 39 is provided in the bearing assembly 20 to determine the amount of force applied by each rib 32 to the borehole interior 38. The sensor 33 39 may be a pressure sensor, a position measuring sensor or a displacement sensor. The processor 80 processes the signals from the sensor 39 and in response thereto and stored information or models controls the operation of each rib 32 and thus precisely controls the drilling direction.

Replace the paragraph beginning on page 13, line 3 with the following:

Electric conductors 65 are run from an upper end 11 of drilling motor 10 to the bearing assembly 20 for providing required electric power to the valve actuators 33 39 and other devices and sensors in the drilling motor 10 and to ~~transit~~ transmit data and signals between the drilling motor 10 and other devices in the system. The rotor 14 and the shaft 28 may be hollow to run conductors 65 therethrough. Appropriate feed-through connectors or couplings, such as coupling 63, are utilized, where necessary, to run the electric conductors 65 through the drilling motor 10. An electric slip ring device 70 in the bearing assembly 20 and a swivel (not shown) at the top of the power section 12 is preferably utilized to pass the conductors 65 to the non-rotating parts in the bearing assembly 20. Electric swivel and slip rings may be replaced by an inductive transmission device. The devices and sensors such as pressure sensors, temperature sensors, sensors to provide axial and radial displacement of the drill shaft 28 are preferably included in the drilling motor 10 to provide data about selected parameters during drilling of the boreholes.

Replace the paragraph beginning on page 13, line 19 with the following:

Figure 2 is a schematic view of an alternative embodiment of a drilling assembly 100 with steering members 30 in the bearing assembly 20 of the mud motor 10 and the power and control devices 90 for operating the steering members 30 disposed above the power section 12 of the mud motor 10. In this configuration the rotor 14 is coupled to the drill shaft 28 by a suitable coupling or flexible shaft 19. A common housing 92 with or without connection joints 93 may be used to house the stator 16, coupling 19 and the bearing

assembly 20. A separate fluid line 91 is run from a source of hydraulic power in section 90 to each of the individual force application members 30 through the housing 92. The section 90 contains the pumps and the control valves and the required control circuits to independently control the operation of each of the ribs 30. This configuration is simpler than the configuration that contains the power and/or control devices in the mud motor 10, more reliable as it does not require using mechanical and electrical connections inside the bearing housing 22. It also enables building reduced overall length mud motors 10 compared to the configuration shown in Figure 1. The configuration of Figure 2 allows drilling of the wellbores with a higher build up rate compared due the proximity of the ribs 30 near the drill bit 50 and the shorter length of the drilling motor 10. A stabilizer 83 is provided at a suitable location uphole of the ribs 30 to provide lateral stability to the drilling assembly 100. Alternatively, a second set of ribs 30 may be incorporated into the drilling assembly as described below.

Replace the paragraph beginning on page 14, line 20 with the following:

Figure 3 is a schematic view of drilling assembly configuration wherein the ribs 30 are placed above the mud motor 10 and the power unit and the control devices to control the operation of the ribs is disposed in a suitable section above the mud motor 10. A hydraulic line 93 provides the fluid to the ribs 30. The operation of the steering devices shown in Figures 2 and Figure 3 are similar to the operation of the embodiment of Figures 1A-1C. In yet another configuration, the ribs 30 may be placed in the bearing assembly 20 as shown in Figure 3 2 and also above the motor 10 as shown in Figure [[4]] 3. In such a configuration, a separate line is run for each of the ribs. A common control circuit and a common hydraulic power unit may be used for all the ribs with each rib having a separate associated control valve. This configuration allows to control of the drilling direction at multiple locations on the drilling assembly.

Replace the paragraph beginning on page 15, line 12 with the following:

Figure 4 is a schematic view of a configuration showing three force application members 32a-32c disposed around the non-rotating housing 22 of the bearing assembly 20 of Figures [[1-4]] 1-3. The configuration of Figure 4 shows three force application members

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32a-32c placed spaced apart around the periphery of the bearing assembly housing **22**. The force application members **32a-32c** are identical and thus the configuration and operation thereof is described with respect to only the member **32a**. The force application member **32a** includes a rib member **102a** that is radially movable as shown by the arrows **408a 110a**. A hydraulically-operated piston **104a** in a chamber **106a** acts on the rib member **102a** to moves the rib member **102a** outward to cause it to apply force to the wellbore. The fluid is supplied to the chamber **106a** from its associated power source via a port **108a**. As described earlier, each force application member is independently operated to control the amount of the force exerted by such member to the wellbore inside, which allows precisely controlling the drilling direction of the wellbore. The force application members **32b** and **32c** respectively include pistons **104b** and **104c**, chambers **106b** and **106c** and inlet ports **108b** and **108c** and they move in the directions shown by the arrows **110b** and **110c**. **Figure 5** is a schematic view of an alternative configuration of the steering members. This configuration differs from the configuration of **Figure 4** in that it does not have the rib members. The pistons **112a-112c** directly apply the force on the wellbore walls the pistons are extended outward.

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Replace the paragraph beginning on page 14, line 20 with the following:

Figure 3 is a schematic view of drilling assembly configuration wherein the ribs **30** are placed above the mud motor **10** and the power unit and the control devices to control the operation of the ribs are disposed in a suitable section above the mud motor **10**. A hydraulic line **93** provides the fluid to the ribs **30**. The operation of the steering devices shown in **Figures 2** and **Figure 3** are similar to the operation of the embodiment of **Figures 1A-1C**. In yet another configuration, the ribs **30** may be placed in the bearing assembly **20** as shown in **Figure [3] 2** and also above the motor **10** as shown in **Figure [4] 3**. In such a configuration, a separate line is run for each of the ribs. A common control circuit and a common hydraulic power unit may be used for all the ribs with each rib having a separate associated control valve. This configuration allows [to] control of the drilling direction at multiple locations on the drilling assembly.

Replace the paragraph beginning on page 15, line 12 with the following:

Figure 4 is a schematic view of a configuration showing three force application members **32a-32c** disposed around the non-rotating housing **22** of the bearing assembly **20** of **Figures [[1-4]] 1-3**. The configuration of **Figure 4** shows three force application members **32a-32c** placed spaced apart around the periphery of the bearing assembly housing **22**. The force application members **32a-32c** are identical and thus the configuration and operation thereof is described with respect to only the member **32a**. The force application member **32a** includes a rib member **102a** that is radially movable as shown by the arrows **[108a] 110a**. A hydraulically-operated piston **104a** in a chamber **106a** acts on the rib member **102a** to moves the rib member **102a** outward to cause it to apply force to the wellbore. The fluid is supplied to the chamber **106a** from its associated power source via a port **108a**. As described earlier, each force application member is independently operated to control the amount of the force exerted by such member to the wellbore inside, which allows precisely controlling the drilling direction of the wellbore. The force application members **32b** and **32c** respectively include pistons **104b** and **104c**, chambers **106b** and **106c** and inlet ports **108b** and **108c** and they move in the directions shown by the arrows **110b** and **110c**. **Figure 5** is a schematic view of an alternative configuration of the steering members. This configuration

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differs from the configuration of **Figure 4** in that it does not have the rib members. The pistons **112a-112c** directly apply the force on the wellbore walls the pistons are extended outward.

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REMARKS AND CONCLUSION

Applicants request entry of the above-listed amendments in the pending application. The amendments to Figures and Written Specification are intended to address objections the Examiner raised in the allowed grant-parent application. These same amendments were entered in the parent application. Thus, it is the Applicant's intent to ensure that the original application and all related continuation patents have the same specification and drawings. No new matter has been entered. For convenience, reproduced below are Applicant's remarks previously made regarding the drawings amendments:

The Examiner objected to the drawings for perceived failure to show reference numbers "18", "51" and "57". The feature described as "shaft 18" on page 8 of the specification is shown and labeled with "18" in Figure 1A. The label "18" appears between the numbers "65" and "16" on the right-hand side of Figure 1A. With respect to reference number "51", Figure 1B has been amended to show this reference number. With respect to reference number "WOB 57", Figure 1B has been amended to show this reference number. A marked-up version of Figure 1B accompanies this Response. Applicants submit that the above explanation and amendment resolve the Examiner's stated objection to the Drawings.

The Examiner objected that the drawings do not appear to show the "electric motor" referred to in cancelled Claims 3 and 13. Applicants observe that on page 10 of the specification, it is explained that the pump 40 may be operated by an electric motor suitably disposed in the bearing assembly 20. It is also explained that the electric motor is an alternative to the disclosed arrangement utilizing hydraulic power. Applicants submit that the technical description and the originally filed Claims adequately describe the electric motor and its function. Nevertheless, to address the Examiner's stated objection, Applicants have added a new Figure 1d that reproduces the arrangement disclosed in the original specification wherein the electric motor 41 is shown.


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this Response to Examiner's Amendment and Rule 312 Amendment to Deposit Account No. 02-0429 (564-9225-US-C3), maintained by Baker Hughes Incorporated.

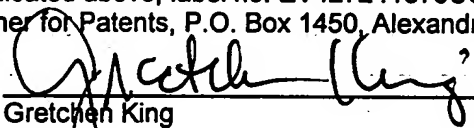
Respectfully submitted,

Dated: July 1, 2005


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SERIAL NO./PAT NO.: 10/625,838
DATE MAILED: 7.01.05
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APPLICANT: Volker Krueger et al.
TITLE: Drilling Assembly with a Storing Device for Coiled-Tubing Operations
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Total Number of Pages in This Submission

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Application Number

10/625,838

Filing Date

July 22, 2003

First Named Inventor

Volker Krueger

Art Unit

3672

Examiner Name

Frank Tsay

Attorney Docket Number

564-9225-US-C3

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Firm Name	Madan, Mossman & Spiram, P.C.		
Signature			
Printed name	Chandran D. Kumar		
Date	July 1, 2005	Reg. No.	48,679

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Typed or printed name	Gretchen King	Date	July 1, 2005

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 Atty Docket No.: 564-9225-US-C3
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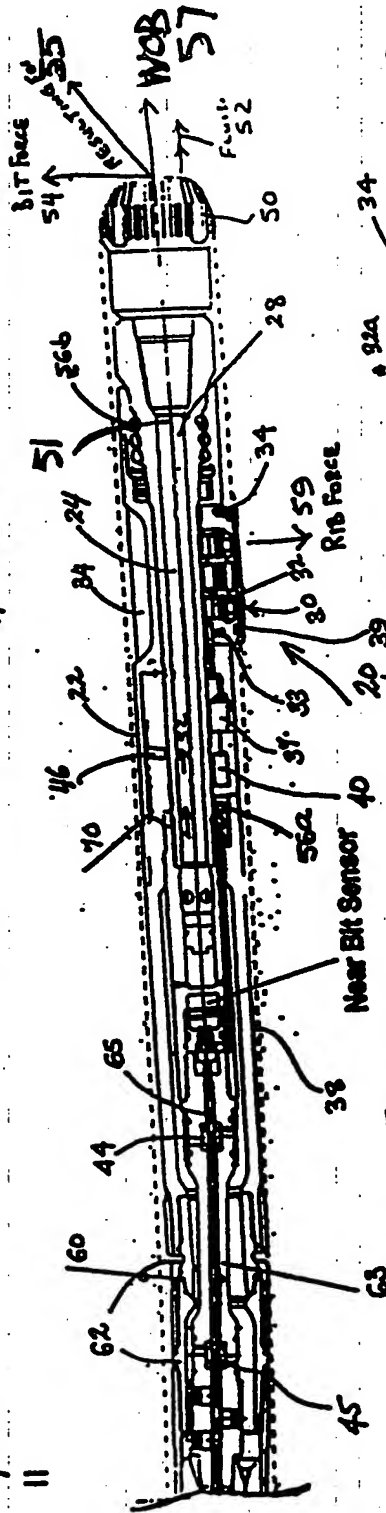
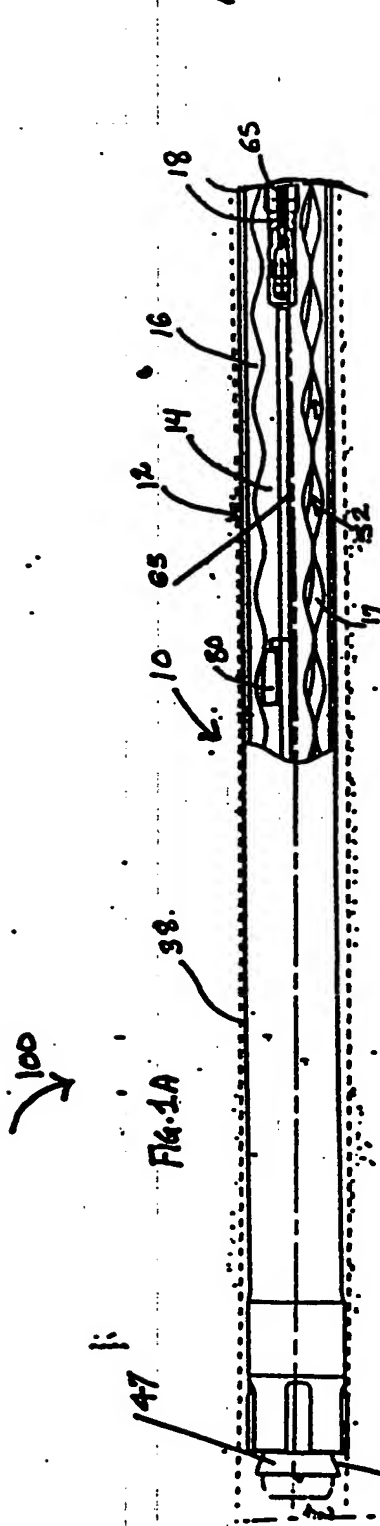


FIG. 1B

(CONTINUED)

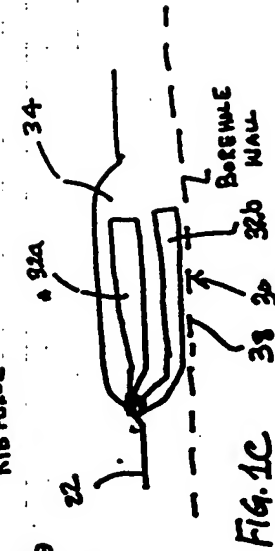


FIG. 1C

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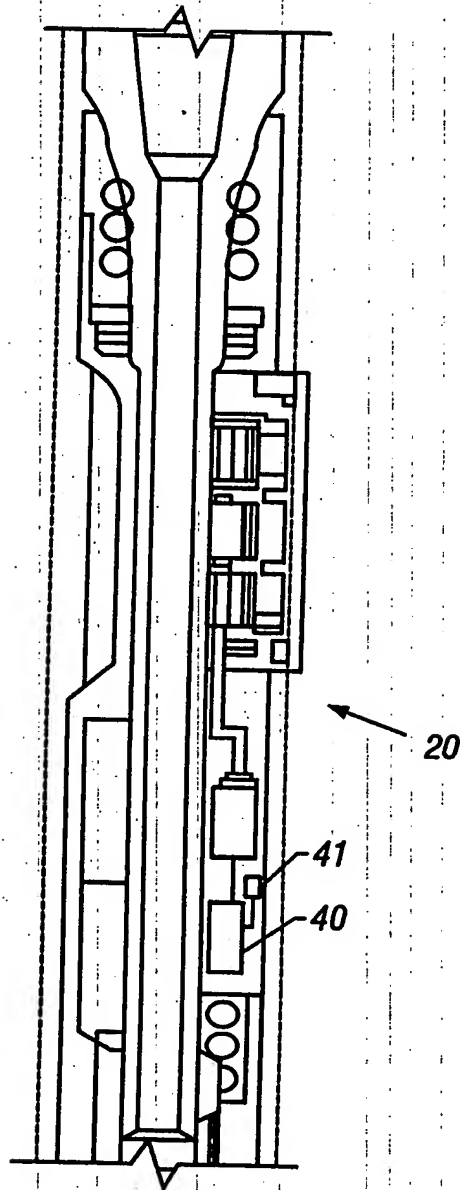


Figure 1D
(NEW)

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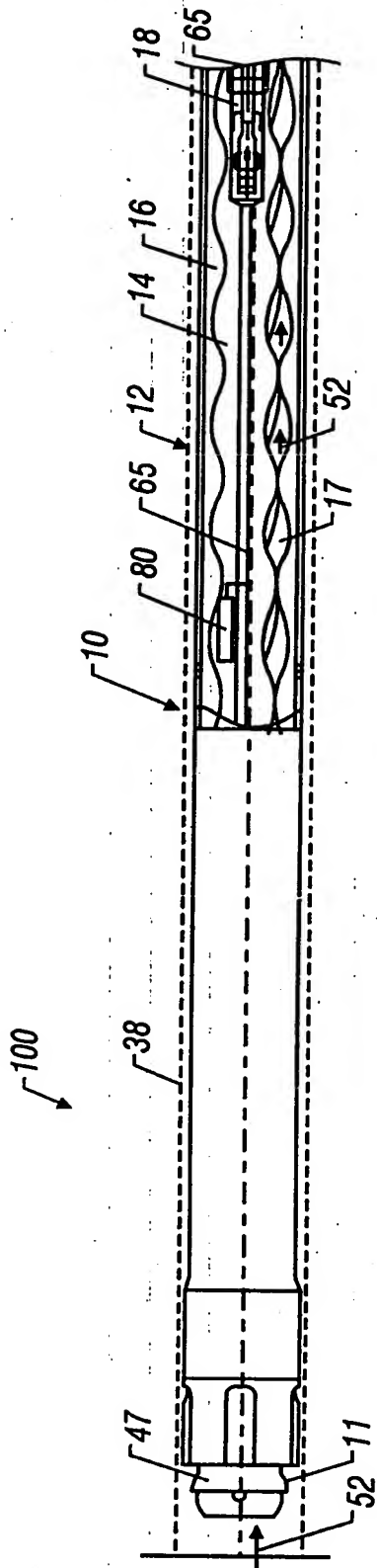


Figure 1A

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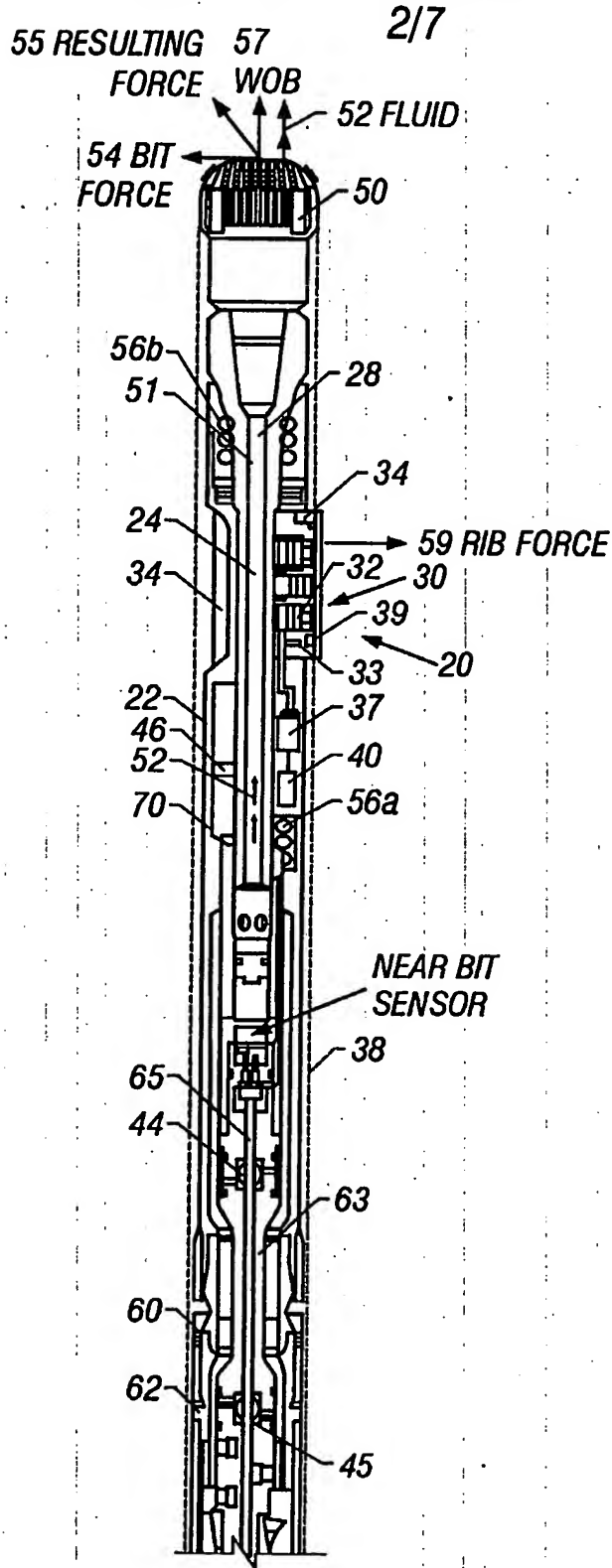


Figure 1B

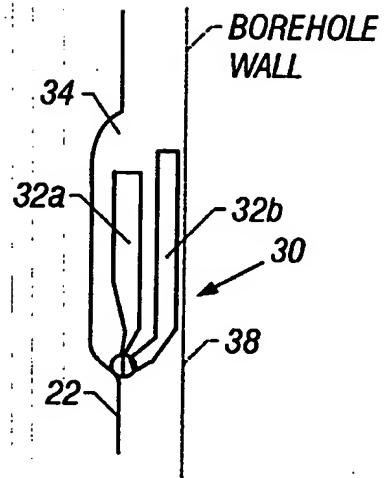


Figure 1C

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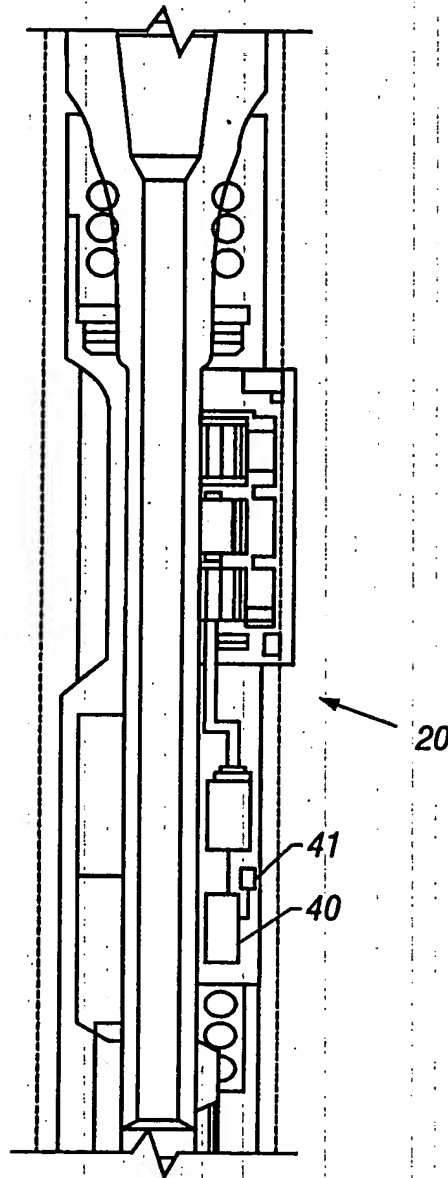


Figure 1D

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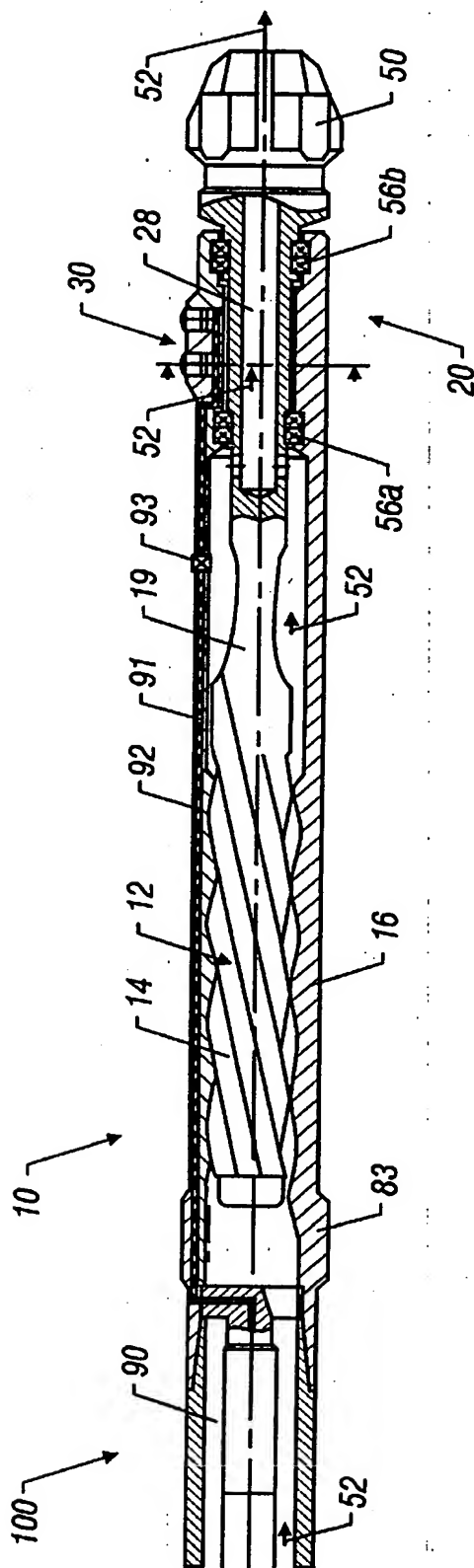


Figure 2

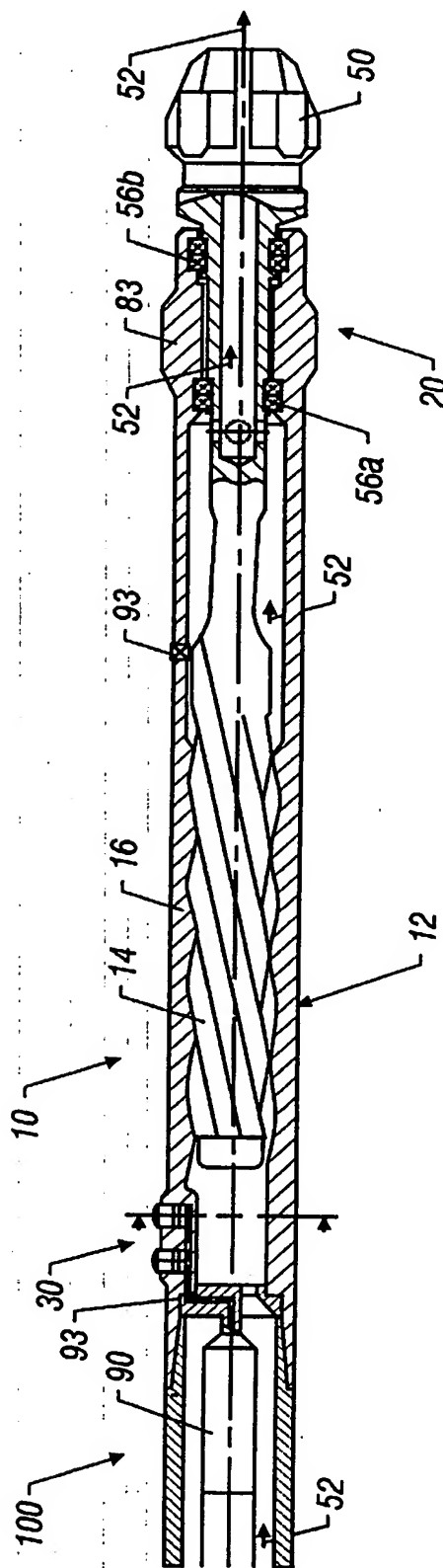


Figure 3

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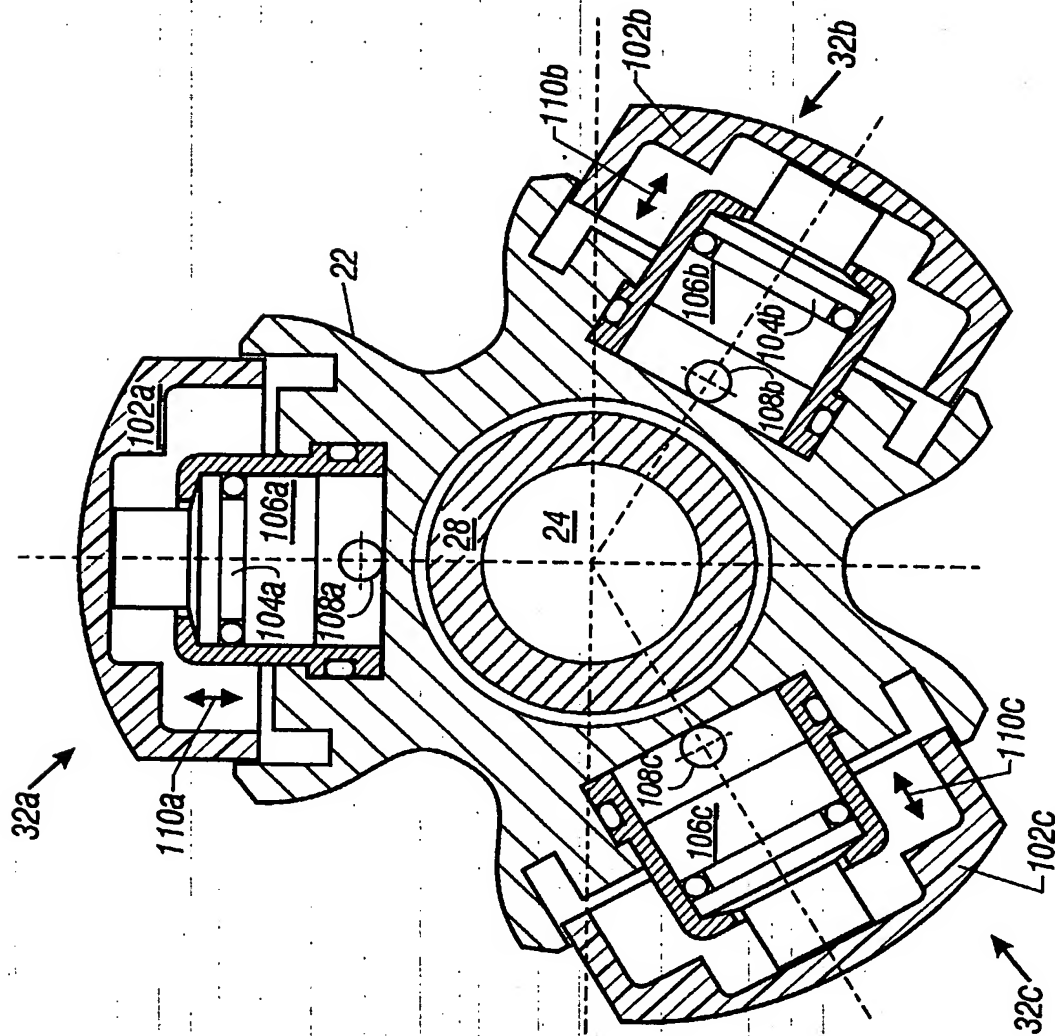


Figure 4

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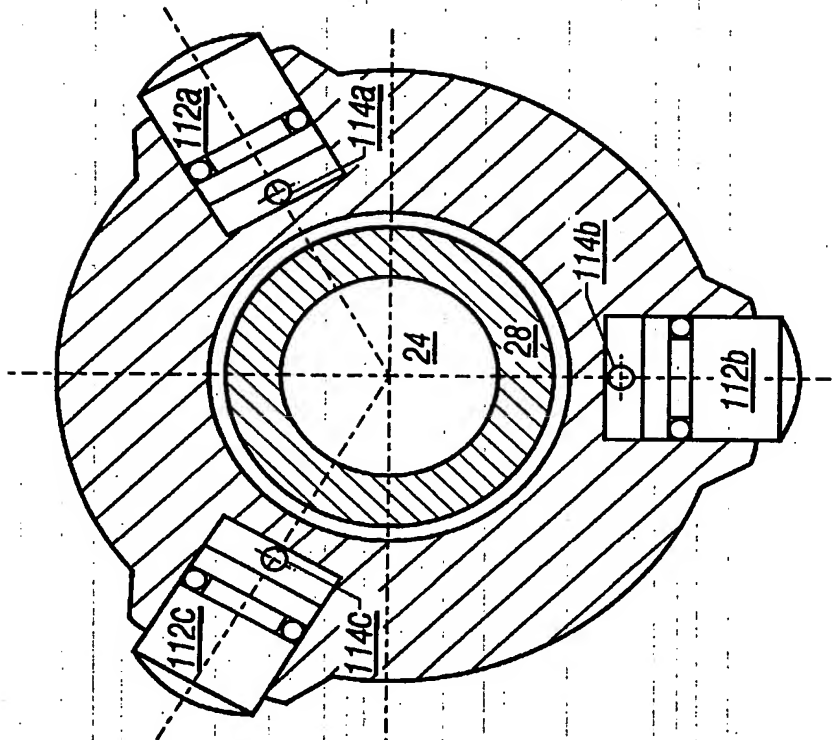


Figure 5

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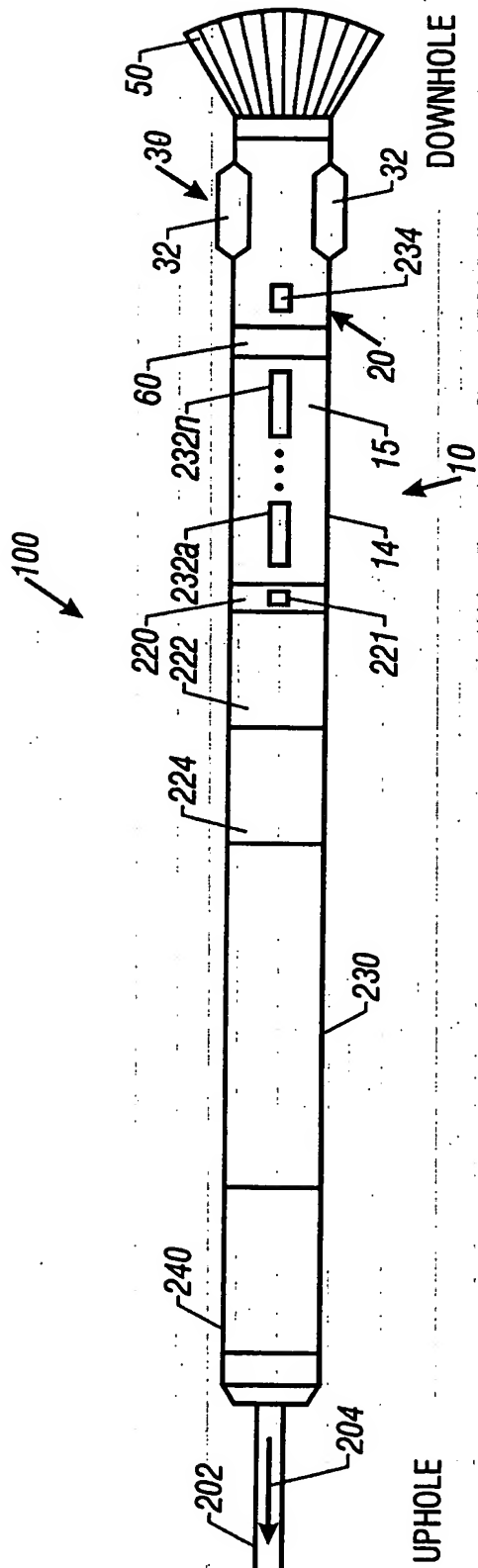


Figure 6